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| | | <p>ASCII Images Sound Compression</p> | <p>have a basic understanding of computer systems from lessons delivered as part of the Key Stage 3 national curriculum.</p> <p>KS3 Understanding computers KS3 Graphics</p> | <ul style="list-style-type: none"> • Understand that data needs to be converted into a binary format to be processed by a computer • Convert positive denary whole numbers (0-255) into 8-bit binary numbers and vice versa • Explain the need for data compression • Understand how bitmap images are represented in binary including the terms: <ul style="list-style-type: none"> - Pixels - Resolution | <p>https://www.pgonline.co.uk/resources/computer-science/gcse-edexcel/?tab=1cp2</p> <p>Replit https://replit.com/</p> |
| Spring 1 | Unit 3 Computers | <p>Components of a computer system The CPU and the Fetch-Execute cycle Secondary storage Operating system Utility software Identifying vulnerabilities Programming languages</p> | <p>KS3 Understanding computers Building on KS2 knowledge Y7 Aut1 Y8 Aut 2 Y9 Spring 2 KS4 CS Systems architecture</p> | <ul style="list-style-type: none"> • Components of a computer system • The CPU and the Fetch-Execute cycle • Secondary storage • Operating system • Utility software • Identifying vulnerabilities | <p>Google classroom PG Online</p> <p>https://www.pgonline.co.uk/resources/computer-science/gcse-edexcel/?tab=1cp2</p> <p>Replit https://replit.com/</p> |

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| | | | | <ul style="list-style-type: none"> • Programming languages | |
| Spring 2 | Unit 1 Computational thinking | Decomposition and abstraction Developing algorithms using flowcharts Developing algorithms using pseudocode Algorithm output, errors and trace tables Searching algorithms Sorting algorithms Truth tables | Y7 Spring 2 Y7 Summer 2 Y8 Aut1 Y8 Spring 1 Y8 Spring 2 Y9 Aut2 Y9 Spring1 KS4 CS Programming KS5 CS Programming Unit 2: Problem solving and theory of computation | <ul style="list-style-type: none"> • Understand flowchart symbols • Understand arithmetic operators and variables • Define the data types integer, floating point number, Boolean, character, string • Be able to use arithmetic and relational operators • Understand types of errors including: • Syntax • Logic • Runtime • Be able to apply logical operators in truth tables with up to three inputs to solve | Google classroom PG Online https://www.pgonline.co.uk/resources/computer-science/gcse-edexcel/?tab=1cp2 Replit https://replit.com/ |

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| | | | | <p>problems</p> <ul style="list-style-type: none"> • Be able to follow and write algorithms using the following logical operators • AND • OR • NOT | |
| Summer 1 | Unit 4: Networks | <p>LANs and WANs The Internet Wired and wireless connections Protocols and layers Network topologies Network security</p> | <p>KS3 Networks Y9 Aut1</p> | <ul style="list-style-type: none"> • Understand why computers are connected in a network • Describe the difference between a Local Area Network and a Wide Area Network • Explain the impact on performance of different network media: <ul style="list-style-type: none"> ○ Speed ○ Range • Understand the characteristics of network topologies, including: <ul style="list-style-type: none"> ○ Star | <p>Google classroom PG Online</p> <p>https://www.pgonline.co.uk/resources/computer-science/gcse-edexcel/?tab=1cp2</p> <p>Replit https://replit.com/</p> |

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| Summer 2 | Unit 5: Issues and impact | Environmental issues Ethical issues Legislation and privacy Cyber security | KS3 Using computers safely, effectively and responsibly Computer crime and cyber security AI and machine learning KS4 Unit 3 Computers | <ul style="list-style-type: none"> • Discuss the environmental issues associated with the use of digital devices including: <ul style="list-style-type: none"> ◦ Energy consumption ◦ Disposal • Understand the ethical issues of digital technology associated with the use of: <ul style="list-style-type: none"> • Robotics • Understand methods | <p>Google classroom PG Online</p> <p>https://www.pgonline.co.uk/resources/computer-science/gcse-edexcel/?tab=1cp2</p> <p>Replit https://replit.com/</p> |

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| | | | | <p>of intellectual property protection for computer systems and software including:</p> <ul style="list-style-type: none"> • Copyright Designs and Patents Act 1988 • Discuss the threat of digital systems posed by malware including: • Viruses, Trojans, key loggers • Understand how hackers exploit technical vulnerabilities to carry out cyberattacks including: • Unpatched software, out-of-date anti-malware • Understand methods of protecting digital systems and data including: • Anti-malware, encryption, acceptable use policies, backup and recovery procedures | |
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| Yr11 (KS4) | Topic Area | Knowledge/Skills that are taught | Knowledge/Skills revisited | What does good look like? | Resources/support at home |
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| Autumn 1 | Programming Project Unit 6 Revision | Data types and operations Sequence and selection Iteration Arrays and lists Subprograms Errors and testing Validation Files | Y7 Spring 2 Y7 Summer 2 Y8 Aut1 Y8 Spring 1 Y8 Spring 2 Y9 Aut2 Y9 Spring1 KS4 CS Programming KS5 CS Programming | <ul style="list-style-type: none"> Understand and use data types: integer, real, Boolean, char and string Declare and use constants and variables Use input, output and assignment statements Use selection and nested selection statements Use NOT, AND and OR and relational operators when creating Boolean expressions Use random number generation | Google classroom PG Online https://www.pgonline.co.uk/resources/computer-science/gcse-edexcel/?tab=1cp2 PG Online Clear Revise Replit https://replit.com/ Seneca learning https://app.senecalearning.com Zigzag revision https://erevision.uk/ |
| Autumn 2 | Programming Project continued Unit 6 Revision | Data types and operations Sequence and selection Iteration | Y7 Spring 2 Y7 Summer 2 Y8 Aut1 Y8 Spring 1 Y8 Spring 2 | <ul style="list-style-type: none"> Understand and use data types: integer, real, Boolean, char and | Google classroom PG Online https://www.pgonline.co.uk/resources/computer-science/gcse-edexcel/?tab=1cp2 |

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| | | <p>Arrays and lists</p> <p>Subprograms</p> <p>Errors and testing</p> <p>Validation</p> <p>Files</p> | <p>Y9 Aut2</p> <p>Y9 Spring1</p> <p>KS4 CS Programming</p> <p>KS5 CS Programming</p> | <p>string</p> <ul style="list-style-type: none"> • Declare and use constants and variables • Use input, output and assignment statements • Use selection and nested selection statements • Use NOT, AND and OR and relational operators when creating Boolean expressions • Use random number generation | <p>puter-science/gcse-edexcel/?tab=1cp2</p> <p>PG Online</p> <p>Clear Revise</p> <p>Replit https://replit.com/</p> <p>Seneca learning https://app.senecalearning.com</p> <p>Zigzag revision https://erevision.uk/</p> |
| Spring 1 | Unit 1,2,3 Revision | See above | See above | See above | See above |
| Spring 2 | Unit 4,5 Revision | See above | See above | See above | See above |
| Summer 1 | Revision/Exams | Revision/Exams | Revision/Exams | Revision/Exams | Revision/Exams |
| Summer 2 | Revision/Exams | Revision/Exams | Revision/Exams | Revision/Exams | Revision/Exams |